### APPENDIX A – CODES USED FOR GROUPING

One of the challenges of this report was to combine information on cancer from several different sources and develop a comprehensive report that details the burden and risk of cancer in the State of Nevada. To add to the complexity of it all, each data source did not use identical coding to identify each type of cancer.

The Nevada Central Cancer Registry uses the International Classification of Diseases – Oncology (ICD-O) coding system that is then broken down into the Topography, or Primary Site, as well as the Morphology of the specific cancer. The Topography section of the ICD-O coding structure is fairly comparable to the ICD-10 mortality classification system, with very little variation between the two systems. However, there are some variations, so this report uses the ICD-O coding structure as the primary source for identifying the type of cancer for this report.

The ICD-10 structure was implemented in 1999 for the coding of the underlying cause of death. However, for the 1996 to 1998 data that are used for this report, the mortality database used the ICD-9 mortality coding structure, which is a different structured system, but is fairly comparable to the ICD-10 revision. However, for this report, due to the variations between the ICD-0 and ICD-10 coding structures and the fact that the ICD-0 system is the primary one used, there have not been any adjustments made to account for potential coding differences that may have occurred due to the change from the ICD-9 to the ICD-10 system in 1999 for all mortality data used in this report.

The ICD-9 coding structure is also used by the inpatient hospital discharge (UB92) database that was used to provide the inpatient discharge statistics for this report. However, all of the 1996 to 2000 hospital discharge data listed in this report is based upon the ICD-9 coding system.

The following pages detail the codes used for each type of coding structure present in the data used for this report. The codes used to identify the leading types of cancer for this report are highlighted. Those not falling under any of the highlighted leading groups were categorized into the All Other Sites grouping.

## Table 296. ICD-O Codes Used

	ICD-O Codes			
Type of Cancer	Topography	Morphology	Excluding	
T			(M = Morphology)	
Total	Sum	Sum		
Lip, Oral Cavity and Pharynx	Sum of subgroups			
Lip	C00		M-9590:9989	
Base of Tongue	C01		M-9590:9989	
Other & Unspecified Parts of Tongue	C02		M-9590:9989	
Parotid Gland	C07		M-9590:9989	
Other & Unspecified Major Salivary glands	C08		M-9590:9989	
Floor of Mouth	C04		M-9590:9989	
Gum Palate	C03 C05		M-9590:9989 M-9590:9989	
Other & Unspecified Parts of Mouth	C05		M-9590:9989	
Nasopharynx	C11		M-9590:9989	
Tonsil	C09		M-9590:9989	
Oropharynx	C10		M-9590:9989	
Pyriform Sinus	C12		M-9590:9989	
Hypopharynx	C13		M-9590:9989	
Other & Unspecified Oral (Buccal) Cavity & Pharynx	C14		M-9590:9989	
Digestive System	Sum of Subgroups			
Esophagus	C15		M-9590:9989	
Stomach	C16		M-9590:9989	
Small Intestine	C17			
Colorectal	Sum of Colon, Rectum, Re	ectosigmoid Junction, Anus, A	Anal Canal and Anorectum	
Colon (excluding Rectum)	Sum of Subgroups			
Cecum	C18.0		M-9590:9989	
Appendix	C18.1		M-9590:9989	
Ascending Colon	C18.2		M-9590:9989	
Hepatic Flexure	C18.3		M-9590:9989	
Transverse Colon	C18.4		M-9590:9989	
Splenic Flexure	C18.5		M-9590:9989	
Descending Colon	C18.6		M-9590:9989	
Sigmoid Colon	C18.7		M-9590:9989	
Large Intestine, NOS	C18.8-C18.9, C26.0		M-9590:9989	
Rectum	C20 C19		M-9590:9989	
Rectosigmoid Junction Anus, Anal Canal and Anorectum	C19 C21		M-9590:9989 M-9590:9989	
Liver	C22.0		M-9590:9989	
Intrahepatic Bile Ducts	C22.1		M-9590:9989	
Gallbladder	C23		M-9590:9989	
Other & Unspecified Biliary Tract	C24		M-9590:9989	
Pancreas	C25		M-9590:9989	
Retroperitoneum	C48.0		M-9590:9989	
Peritoneum, Omentum and Mesentery	C48.1-C48.2		M-9590:9989	
Other Digestive Organs	C26.8-C26.9, C48.8		M-9590:9989	
Respiratory System	Sum of Subgroups			
Nasal Cavity and Middle Ear	C30		M-9590:9989	
Accessory Sinuses	C31		M-9590:9989	
Larynx	C32		M-9590:9989	
Lung and Bronchus	C34		M-9590:9989	
Pleura	C38.4		M-9590:9989	
Trachea	C33		M-9590:9989	
Mediastinum and Other Respiratory Organs	C38.1, C38.3, C38.8, C39		M-9590:9989	
Bones, Joints and Articular Cartilage	Sum of Subgroups			
Bones, Joints & Articular Cartilage of Limbs	C40		M-9590:9989	
Bones, Joints & Articular Cartilage of Other & Unspec Sites	C41		M-9590:9989	
Soft Tissue (Including Heart)	Sum of Subgroups		M 0500-0000	
Heart	C38.0		M-9590:9989	
Peripheral Nerves & Autonomic Nervous System Connective, Subcutaneous & Other Soft Tissues	C47 C49		M-9590:9989	
Connective, Subcutaneous & Other Soit Tissues	C49		M-9590:9989	

## **Table 296. ICD-O Codes Used (Continued)**

	ICD-O Codes				
Type of Cancer	Sum of Subgroups				
Skin (Excluding Basal And Squamous)  Melanomas Of The Skin Other Non-Epithelial Skin	C44	8720-8790	8010:8045, 8050:8082,		
Breast Female Genital System					
Cervix Uteri Corpus Uteri & Uterus, NOS	C53		M-9590:9989		
Corpus Uteri Uterus, NOS	C55		M-9590:9989		
Ovary Vagina Vulva Placenta	C52 C51 C58		M-9590:9989 M-9590:9989 M-9590:9989		
Other Female Genital Organs  Male Genital System  Prostate	Sum of Subgroups				
Testis Penis Other Male Genital Organs	C62 C60 C63		M-9590:9989 M-9590:9989		
Urinary System Urinary Bladder Kidney and Renal Pelvis	C67	I Pelvis	M-9590:9989		
Kidney Renal Pelvis Ureter Other Urinary Organs Eye and Orbit	C64 C65 C66 C68 C69		M-9590:9989 M-9590:9989		
Brain and Other Central Nervous System Brain Meninges Spinal Cord, Cranial Nerves, & Other Parts of CNS	Sum of Subgroups C71 C70 C72		M-9530:9539, 9590:9989 M-9590:9989 M-9590:9989		
Endocrine System Thyroid Gland Adrenal Gland	Sum of Subgroups C73 C74				
Other Endocrine (Including Thymus) Hodgkin's Lymphoma	C37, C75	M-9650:9667	M-9590:9989		
Non-Hodgkin's Lymphoma  Multiple Myeloma	Compared and annual	M-9590:9595, 9670:9717, 9823:9827 M-9731:9732	C42.0, C42.1, C42.4		
Leukemia  Lymphocytic  Acute Lymphocytic	Sum of subgroups Sum of subgroups	M-9821:9828			
Chronic Lymphocytic Other Lymphocytic Granulocytic (Myeloid) Acute Myeloid	C42.0, C42.1, C42.4 Sum of subgroups	M-9823 M-9820, 9822, 9824:9826 M-9840, 9861, 9866, 9867, 9871:9874			
Chronic Myeloid Other Myeloid Monocytic	Sum of subgroups	M-9863:9868 M-9860, 9862, 9864			
Acute Monocytic Chronic Monocytic Other Monocytic Other	Sum of subgroups	M-9891 M-9893 M-9890, 9892, 9894			
Other Acute Other Chronic Aleukemic, Subleukemic and NOS		M-9801, 9841, 9931, 9932 M-9803, 9842			
Other, III-Defined and Unspecified Sites	C42.0, C42.1, C42.4 All Others	M-9800, 9802, 9804, 9830, 9850, 9870, 9880, 9900, 9910, 9930, 9940, 9941, 9827			

Table 297. ICD-9 and ICD-10 Codes Used

Type of Cancer	ICD-9	ICD-10
Total	Sum	Sum
Lip, Oral Cavity and Pharynx	Sum of subgroups	Sum of subgroups
Lip	140	C00
Base of Tongue	141.0	C01
Other & Unspecified Parts of Tongue	141.1-141.9	C02
Parotid Gland	142.0	C07
Other & Unspecified Major Salivary glands	142.1-142.9	C08
Floor of Mouth	144	C04
Gum Palate	143 145.2-145.5	C03 C05
Other & Unspecified Parts of Mouth	145.0, 145.1, 145.6-145.9	C06
Nasopharynx	145.0, 145.1, 145.0-145.9	C11
Tonsil	146.0-146.2	C09
Oropharynx	146.3-146.9	C10
Pyriform Sinus	148.1	C12
Hypopharynx	148.0, 148.2-148.9	C13
Other & Unspecified Oral (Buccal) Cavity & Pharynx	149	C14
Digestive System	Sum of Subgroups	Sum of Subgroups
Esophagus	150	C15
Stomach	151	C16
Small Intestine	152	C17
Color (oveluding Poetum)		Inction, Anus, Anal Canal and Anorectum
Colon (excluding Rectum) Cecum	Sum of Subgroups 153.4	Sum of Subgroups C18.0
Appendix	153.5	C18.0 C18.1
Ascending Colon	153.6	C18.2
Hepatic Flexure	153.0	C18.3
Transverse Colon	153.1	C18.4
Splenic Flexure	153.7	C18.5
Descending Colon	153.2	C18.6
Sigmoid Colon	153.3	C18.7
Large Intestine, NOS	153.8-153.9, 159.0	C18.8-C18.9, C26.0
Rectum	154.1	C20
Rectosigmoid Junction	154.0	C19
Anus, Anal Canal and Anorectum	154.2-154.8	C21
Liver Intrahepatic Bile Ducts	155.0, 155.2 155.1	C22.0, C22.2-C22.4, C22.7, C22.9 C22.1
Gallbladder	156.0	C23
Other & Unspecified Biliary Tract	156.1-156.9	C24
Pancreas	157	C25
Retroperitoneum	158.0	C48.0
Peritoneum, Omentum and Mesentery	158.8-158.9	C45.1, C48.1, C48.2
Other Digestive Organs	159.8, 159.9	C26.8-C26.9, C48.8
Respiratory System	Sum of Subgroups	Sum of Subgroups
Nasal Cavity and Middle Ear	160.0, 160.1	C30
Accessory Sinuses	160.2-160.9	C31
Larynx	161	C32
Lung and Bronchus	162.2-162.9	C34 C45 0
Pleura Trachea	163 162.0	C38.4, C45.0 C33
Mediastinum and Other Respiratory Organs	164.2-164.9, 165	C38.1, C38.3, C38.8, C39
Bones, Joints and Articular Cartilage	Sum of Subgroups	Sum of Subgroups
Bones, Joints & Articular Cartilage of Limbs	170.4, 170.5, 170.7, 170.8	C40
Bones, Joints & Articular Cartilage of Other & Unspec Sites	170.0-170.3, 170.6, 170.9	C41
Soft Tissue (Including Heart)	Sum of Subgroups	Sum of Subgroups
Heart	164.1	C38.0
Peripheral Nerves & Autonomic Nervous System		C47
Connective, Subcutaneous & Other Soft Tissues	171	C49

## Table 297. ICD-9 and ICD-10 Codes Used (Continued)

	ICD-O Codes			
Type of Cancer	Topography	Morphology		
Skin (Excluding Basal And Squamous)	Sum of Subgroups	Sum of Subgroups		
Melanomas Of The Skin	172	C43		
Other Non-Epithelial Skin	173, 176	C44, C46		
Breast	174-175	C50		
Female Genital System	Sum of Subgroups	Sum of Subgroups		
Cervix Uteri	180	C53		
Corpus Uteri & Uterus, NOS	Sum of Corpus Uteri and Uterus, NOS	Sum of Corpus Uteri and Uterus, NOS		
Corpus Uteri	182	C54		
Uterus, NOS	179	C55		
Ovary	183.0	C56		
Vagina	184.0	C52		
Vulva Placenta	184.1-184.4 181	C51 C58		
Other Female Genital Organs	183.2-183.9, 184.8, 184.9	C56 C57		
Male Genital System	Sum of Subgroups	Sum of Subgroups		
Prostate	185	C61		
Testis	186	C62		
Penis	187.1-187.4	C60		
Other Male Genital Organs	187.5-187.9	C63		
Urinary System	Sum of Subgroups	Sum of Subgroups		
Urinary Bladder	188	C67		
Kidney and Renal Pelvis	Sum of Kidney and Renal Pelvis	Sum of Kidney and Renal Pelvis		
Kidney	189.0	C64		
Renal Pelvis	189.1	C65		
Ureter	189.2	C66		
Other Urinary Organs	189.3-189.9	C68		
Eye and Orbit	190	C69		
Brain and Other Central Nervous System	Sum of Subgroups	Sum of Subgroups		
Brain	191	C71		
Meninges	192.1, 192.3	C70		
Spinal Cord, Cranial Nerves, & Other Parts of CNS	192.0, 192.2, 192.8, 192.9	C72		
Endocrine System	Sum of Subgroups	Sum of Subgroups		
Thyroid Gland Adrenal Gland	193.0	C73		
Other Endocrine (Including Thymus)	164.0, 194.1-194.9	C37, C75		
Hodgkin's Lymphoma	201	C81		
Non-Hodgkin's Lymphoma	200, 202.8, 202.9, 202.0-202.2	C82-C85.9, C96.3		
Multiple Myeloma	203.0, 238.6	C90.0, C90.2		
Leukemia	Sum of subgroups	Sum of subgroups		
Lymphocytic	Sum of subgroups	Sum of subgroups		
Acute Lymphocytic	204.0	C91.0		
Chronic Lymphocytic	204.1	C91.1		
Other Lymphocytic	204.2-204.9	C91.2, C91.3, C91.7, C91.9		
Granulocytic (Myeloid)	Sum of subgroups	Sum of subgroups		
Acute Myeloid	205.0	C92.4, C92.5, C92.0		
Chronic Myeloid	205.1	C92.1		
Other Myeloid	205.2-205.9	C92.2, C92.3, C92.7, C92.9		
Monocytic	Sum of subgroups	Sum of subgroups		
Acute Monocytic	206.0	C93.0		
Chronic Monocytic	206.1	C93.1		
Other Monocytic	206.2-206.9	C93.2, C93.7, C93.9		
Other Acute	Sum of subgroups	004.0, 005.0		
Other Acute Other Chronic	207.0, 208.0 207.1, 208.1	C94.0, C95.0 C94.1, C95.1		
Aleukemic, Subleukemic and NOS		C90.1, C94.7, C91.4, C91.5, C94.2,		
Alcunctific, Subjetitle and INOS	202.4, 203.1, 207.2, 207.8, 208.2-208.9	C94.5, C95.2, C95.7, C95.9		
Other, III-Defined and Unspecified Sites	All Others	All Others		
Street, Somiod and Shoposinod Oitob	0 0 1010	7 til Otilela		

### APPENDIX B – FORMULAS

#### **AGE-ADJUSTED RATE:**

$$\frac{E_t}{S}$$
 ×100,000

$$E_t$$
 = Total Expected Number of Events =  $\sum_{i=1}^{k} E_i$ 

$$S_t$$
 = Total Standard Population =  $\sum_{i=1}^k S_i$ 

$$CR$$
 = Crude Rate =  $\frac{N_t}{P_t} \times 100,000$ 

$$P_t$$
 = Total State Population =  $\sum_{i=1}^{k} P_i$ 

$$N_t$$
 = Total Number of Events =  $\sum_{i=1}^{k} N_i$ 

$$E_i$$
 = Age-Specific Expected Number of Events =  $\frac{N_i}{P_i} \times S_i$ 

$$S_i$$
 = Standard Age-Specific Population

$$k$$
 = Number of Age Groups

# AGE-ADJUSTED RATE CONFIDENCE INTERVALS:

$$w_{i} = \frac{stdmil_{i}}{\left(pop_{i} \times \sum_{j=x}^{y} stdmil_{j}\right)}$$

$$w_m = \max(w_i)$$

$$v = \sum_{i=x}^{y} (w_i^2 \times count_i)$$

$$CI_{low} = \left(\frac{v}{2 \times rate}\right) \times \left(ChiInv\left(\frac{p}{2}, \frac{\left(2 \times rate^{2}\right)}{v}\right)\right) \times 100,000$$

$$CI_{upper} = \left(\frac{v + w_m^2}{2(rate + w_m)}\right) \times \left(ChiInv\left(1 - \frac{p}{2}, \frac{2(rate + w_m)^2}{\left(v + w_m^2\right)}\right)\right) \times 100,000$$

# AGE-ADJUSTED RATE STANDARD ERROR:

$$SE_{AArate} = \left[ \sum_{i=x}^{y} \left( \frac{stdmil_{i}}{\sum_{j=x}^{y} stdmil_{j}} \right)^{2} \times \left( \frac{count_{i}}{population_{i}^{2}} \right) \right]^{\frac{1}{2}} \times 100,000$$

#### **CAUSE SPECIFIC SURVIVAL RATE:**

$$\begin{split} L_x &= L_{x-1} - D_{x-1} - U_{x-1} - W_{x-1} \\ L_x^* &= L_x - \frac{1}{2} \left( U_x + W_x \right) \\ P_x &= 1 - \frac{D_x}{L_x^*} \\ CP_x &= P_1, P_2, \dots, P_x \end{split}$$

 $L_1$  = Total number of cases included in table

 $L_x$  = Number of cases alive at beginning of interval x

 $L_x^*$  = Adjusted number of cases alive at during interval x

 $D_x$  = Number of cases dying from Cancer during interval x

 $U_x$  = Number of cases untraced (lost to follow up) during interval x, where the definition for "lost to follow up" is: alive with follow up date prior to some prescribed date

 $W_x$  = Number of cases withdrawn alive during interval x, where the definition of "withdrawn alive" is: alive with follow up date later than some specified date (This is the same as in previous definition.)

 $P_x$  = Cause specific survival rate for interval x

 $CP_x$  = Cumulative cause specific survival rate

#### **CRUDE RATE:**

$$CR = \frac{Number of Events}{Population} \times 100,000$$

# CRUDE RATE CONFIDENCE INTERVALS:

$$CI_{lower} = \left(\frac{100,000}{Population}\right) \times \left(Events - \left(1.96 \times \sqrt{Events}\right)\right)$$

$$CI_{upper} = \left(\frac{100,000}{Population}\right) \times \left(Events + \left(1.96 \times \sqrt{Events}\right)\right)$$

#### **MEDIAN SURVIVAL RATE:**

$$MedianSurvival = \left(Interval - 1\right) + \left(\frac{\left(CP_{x-1} - .5\right)}{\left(CP_{x-1} - CP_{x}\right)}\right)$$

**ELSE IF:**  $CP_x$  for first interval is less than .5, then median survival:

$$MedianSurvival = \frac{.5}{(1 - CP_x)}$$

**ELSE IF:**  $CP_x$  for interval is equal to .5, then median survival:

MedianSurvival = Interval

 $CP_x$  = Cumulative cause specific survival rate for interval x

# PERCENTAGE (BRFSS) CONFIDENCE INTERVALS:

$$CI_{lower} = Weighted\% - 1.96 \times \sqrt{\frac{Weighted\% \times (1 - Weighted\%)}{Total \text{Re sponses}}}$$

$$CI_{upper} = Weighted\% + 1.96 \times \sqrt{\frac{Weighted\% \times (1 - Weighted\%)}{Total \text{Re sponses}}}$$

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### FEEDBACK AND SUGGESTIONS

In a continuing effort to provide an annual Cancer Report that is useful to the communities of Nevada, feedback and suggestions on the information contained in this report is welcome. An electronic form is also available for completion at: <a href="http://health2k.state.nv.us/nihds/cancer/1996-2000Report/feedback">http://health2k.state.nv.us/nihds/cancer/1996-2000Report/feedback</a>.

Please return the completed survey by mail, fax or email to:

Center for Health Data and Research Bureau of Health Planning and Statistics 505 E. King Street, Rm 102 Carson City, NV 89701 Fax: (775) 684-4156 tpollard@nvhd.state.nv.us

1.	1. How did you first find the report?								
	Hard Copy	Electronic	Сору		State Web	site			
2.	Please rate the overall va	lue of the rep	ort:						
	Extremely Valuable 5	4		3		2	No value 1		
3.	3. Please rate the general information included in this report:								
	Type of Information	Extremely Helpful 5	4	Somewhat Helpful 3	2	Not Helpful 1	Not Applicable 0		
	General Sections Overview								
	Cancer Incidence								
	Inpatient Discharge								
	Mortality								
	Survival Rate								

(PLEASE CONTINUE SURVEY ON NEXT PAGE)

4. Please rate the information on specific types of cancer included in this report:

Type of Information	Extremely Helpful 5	4	Somewhat Helpful 3	2	Not Helpful 1	Not Applicable 0	
Type of Cancer All Cancers							
Lung and Bronchus							
Breast							
Prostate							
Colorectal							
Urinary Bladder							
Non-Hodgkin's Lymphoma							
Kidney & Renal Pelvis							
Leukemia							
Lip, Oral Cavity & Pharynx							
Pancreas							
All Other Cancers							
Other Comments:							
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